

In the Claims:

Following is a complete listing of the claims pending in the application, as amended:

1-81. (Cancelled)

82. (New) A method for treating a patient that has a wireless marker attached to the patient relative to a treatment target, comprising:

irradiating the patient with a radiation beam;

sensing the marker to obtain position information related to an actual position of the marker;

determining an actual location of the treatment target based on the sensed position information of the marker; and

controlling the radiation beam and/or movement of the patient automatically via a computer based on the actual position of the treatment target while sensing the marker.

83. (New) The method of claim 82, further comprising repeating the sensing and determining procedures to continuously track the actual position of the treatment target generally during irradiation of the patient.

84. (New) The method of claim 82 wherein the patient is supported by a table, and controlling movement of the patient comprises using the computer to automatically move the table when the actual position of the treatment target is beyond an acceptable range from a beam isocenter of the radiation beam.

85. (New) The method of claim 82 wherein controlling the radiation beam comprises using the computer to interrupt the radiation beam when the actual position of the treatment target is beyond an acceptable range from a beam isocenter of the radiation beam.

86. (New) The method of claim 82, further comprising computing a displacement between the treatment target and a beam isocenter of the radiation beam in three dimensions based on the actual location of the treatment target at least twelve times per minute generally during irradiation of the patient.

87. (New) The method of claim 86 wherein the patient is supported by a table, and controlling movement of the patient comprises providing the computed displacement between the treatment target and the beam isocenter to a controller that automatically moves the table when the displacement is beyond an acceptable range.

88. (New) The method of claim 86 wherein controlling the radiation beam comprises providing the computed displacement between the treatment target and the beam isocenter to a controller that interrupts the radiation beam when the displacement is beyond an acceptable range.

89. (New) A method for treating a patient having a wireless marker implanted at a site relative to a treatment target, the method comprising:

irradiating the patient with a radiation beam;

sensing the marker to obtain position information related to an actual position of the marker;

determining an actual position of the treatment target based on the position information of the marker;

computing a displacement between the treatment target and the beam isocenter in three dimensions based on the actual position of the treatment target; and

moving a patient support platform by automatic control when the displacement between the treatment target and the beam isocenter is beyond an acceptable range.

90. (New) The method of claim 89, further comprising repeating the sensing, determining and computing procedures to continuously monitor the displacement of the treatment target while irradiating the patient.

91. (New) The method of claim 89, further comprising controlling the radiation beam by using the automatic control to interrupt the radiation beam when the displacement between the treatment target and the beam isocenter is beyond an acceptable range.

92. (New) The method of claim 89, further comprising performing the computing process at least twelve times per minute while irradiating the patient.

93. (New) A method for treating a patient that has a wireless marker positioned relative to a treatment target, comprising:

placing the patient on a patient support of a radiation delivery device such that
the wireless marker can be sensed by a sensor;

irradiating at least a portion of the patient with a radiation beam;

obtaining position information about the position and/or orientation of the
wireless marker from the sensor;

determining an actual location of the treatment target based on the position
information obtained from the sensor;

computing a displacement between the treatment target and a beam isocenter of
the radiation beam; and

automatically moving the patient support and/or controlling the radiation beam
via a computer when the displacement between the treatment target and
the beam isocenter is not within a desired range.

94. (New) A method for treating a patient having a wireless marker positioned relative to a treatment target, comprising:

placing the patient on a patient support of a radiation delivery device such that the wireless marker can be sensed by a sensor;

obtaining position information about the position and/or orientation of the wireless marker from the sensor;

determining an actual location of the treatment target based on the position information obtained from the sensor;

computing a displacement between the treatment target and a beam isocenter of the radiation beam; and

automatically moving the patient support and/or controlling the radiation beam via a computer based on the computed displacement between the treatment target and the beam isocenter.

95. (New) A method for treating a patient having a wireless marker attached to the patient relative to a treatment target, the method comprising:

sensing the marker to obtain position information related to an actual position of the marker;

determining an actual location of the treatment target based on the sensed position information of the marker; and

controlling a radiation beam for treating the patient and/or movement of the patient automatically via a computer based on the actual position of the treatment target while sensing the marker.

96. (New) A method for treating a patient having a wireless marker attached to the patient, the method comprising:

sensing the marker to obtain position information related to an actual position of the marker;

determining an actual location of the marker based on the sensed position information of the marker; and

controlling a radiation beam for treating the patient and/or movement of the patient automatically via a computer based on the actual position of the marker while sensing the marker.

97. (New) A method for treating a patient having a wireless marker attached to the patient, the method comprising:

sensing the marker to obtain position information related to an actual position of the marker;

determining an actual location of the marker based on the sensed position information of the marker; and

controlling a radiation beam for treating the patient and/or movement of the patient automatically via a computer based on the actual position of the marker while the patient is proximate to a sensor that obtains the position information.

98. (New) A control system for use in connection with a radiation delivery system having a radiation source that produces a radiation beam, a patient support, and a drive system that moves the patient support, the control system comprising:

a wireless marker configured to be implanted in the patient at a site relative to a treatment target;

a sensor that obtains position information about the location and/or orientation of the marker; and

a computer operatively coupled to the sensor, the computer having a computer operable medium containing instructions that cause the computer to (a) receive the position information from the sensor, (b) determine an actual location of the treatment target, (c) compute a displacement between the treatment target and a beam isocenter of the radiation beam, and (d) automatically control the radiation beam and/or move the patient support based on the computed displacement between the treatment target and the beam isocenter.

99. (New) The control system of claim 98 wherein the instructions contained by the computer operable medium further cause the computer to compute the displacement between the treatment target and the beam isocenter in three dimensions based on the actual location of the treatment target at least every at least twelve times per minute while the sensor obtains the position information.

100. (New) The control system of claim 98 wherein the instructions contained by the computer operable medium further cause the computer to operate the drive system to move the table so that the treatment target remains in an acceptable range of the beam isocenter.

101. (New) The system of claim 98 wherein the instructions contained by the computer operable medium further cause the computer to operate the radiation source to interrupt the radiation beam when the computed displacement is not within an acceptable range.

102. (New) A control system for use in connection with a radiation delivery system having a radiation source that produces a radiation beam, a patient support, and a drive system that moves the patient support, the control system comprising:

a wireless marker configured to be implanted in the patient at a site relative to a treatment target;

a sensor that obtains position information about the location and/or orientation of the marker; and

a computer operatively coupled to the sensor, the computer having a computer operable medium containing instructions that cause the computer to perform the method of (a) sensing the marker to obtain position information related to an actual position of the marker, (b) determining an actual location of the treatment target based on the sensed position information of the marker, and (c) controlling the radiation beam and/or

movement of the patient automatically via a computer based on the actual position of the treatment target while sensing the marker.

103. (New) A control system for use in connection with a radiation delivery system having a radiation source that produces a radiation beam, a patient support, and a drive system that moves the patient support, the control system comprising:

- a wireless marker configured to be implanted in the patient at a site relative to a treatment target;
- a sensor that obtains position information about the location and/or orientation of the marker; and
- a computer operatively coupled to the sensor, the computer having a computer operable medium containing instructions that cause the computer to perform the method of (a) sensing the marker to obtain position information related to an actual position of the marker, (b) determining an actual position of the treatment target based on the position information of the marker, (c) computing a displacement between the treatment target and a beam isocenter of the radiation beam in three dimensions based on the actual position of the treatment target, and (d) moving a patient support platform by automatic control when the displacement between the treatment target and the beam isocenter is beyond an acceptable range.

104. (New) A control system for use in connection with a radiation delivery system having a radiation source that produces a radiation beam, a patient support, and a drive system that moves the patient support, the control system comprising:

- a wireless marker configured to be implanted in the patient at a site relative to a treatment target;
- a sensor that obtains position information about the location and/or orientation of the marker; and
- a computer operatively coupled to the sensor, the computer having a computer operable medium containing instructions that cause the computer to

perform a method while the patient is placed on the patient support such that the wireless marker can be sensed by the sensor, the method comprising (a) obtaining position information about the position and/or orientation of the wireless marker from the sensor, (b) determining an actual location of the treatment target based on the position information obtained from the sensor, (c) computing a displacement between the treatment target and a beam isocenter of the radiation beam, and (d) automatically moving the patient support and/or controlling the radiation beam via a computer based on the computed displacement between the treatment target and the beam isocenter.

105. (New) A control system for use in connection with a radiation delivery system having a radiation source that produces a radiation beam, a patient support, and a drive system that moves the patient support, the control system comprising:

a wireless marker configured to be implanted in the patient at a site relative to a treatment target;

a sensor that obtains position information about the location and/or orientation of the marker; and

a computer operatively coupled to the sensor, the computer having a computer operable medium containing instructions that cause the computer to perform a method while the patient is placed on the patient support such that the wireless marker can be sensed by the sensor, the method comprising (a) obtaining position information about the position and/or orientation of the wireless marker from the sensor, (b) determining an actual location of the treatment target based on the position information obtained from the sensor, (c) computing a displacement between the treatment target and a beam isocenter of the radiation beam, and (d) automatically moving the patient support and/or controlling the radiation beam via a computer based on the computed displacement between the treatment target and the beam isocenter.

106. (New) A control system for use in connection with a radiation delivery system having a radiation source that produces a radiation beam, a patient support, and a drive system that moves the patient support, the control system comprising:

- a wireless marker configured to be implanted in the patient at a site relative to a target in the patient;
- a sensor that obtains position information about the location and/or orientation of the marker; and
- a computer operatively coupled to the sensor, the computer having a computer operable medium containing instructions that cause the computer to perform the method of (a) sensing the marker to obtain position information related to an actual position of the marker, (b) determining an actual location of the target based on the sensed position information of the marker, and (c) controlling a radiation beam for treating the patient and/or movement of the patient automatically via a computer based on the actual position of the target while sensing the marker.

107. (New) A control system for use in connection with a radiation delivery system having a radiation source that produces a radiation beam, a patient support, and a drive system that moves the patient support, the control system comprising:

- a wireless marker configured to be implanted in the patient at a site relative to a target;
- a sensor that obtains position information about the location and/or orientation of the marker; and
- a computer operatively coupled to the sensor, the computer having a computer operable medium containing instructions that cause the computer to perform the method of (a) sensing the marker to obtain position information related to an actual position of the marker, (b) determining an actual location of the marker based on the sensed position information of the marker, and (c) controlling a radiation beam for treating the patient

and/or movement of the patient automatically via a computer based on the actual position of the marker while sensing the marker.